

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of	Atty. Docket : NL 020702
HUBERT SJOERD BLAAUW ET AL.	Group Art Unit: 1793
Serial No. 10/522,287	Examiner: JESSEE RANDALL ROE
Filed: January 25, 2005	CONF. NO. 1506

TITLE: PLASMA-NITRIDING OF MARAGING STEEL, SHAVER CAP FOR AN
ELECTRIC SHAVER, CUTTING DEVICE MADE OUT OF SUCH STEEL
AND AN ELECTRIC SHAVER

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

Appellants herewith respectfully present its Brief on Appeal
as follows:

REAL PARTY IN INTEREST

The real party in interest is Koninklijke Philips Electronics N.V., a corporation of The Netherlands having an office and a place of business at Groenewoudseweg 1, Eindhoven, Netherlands 5621 BA.

RELATED APPEALS AND INTERFERENCES

To the best of Appellants' knowledge and belief, there are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1-4 and 8-13 are pending in this application. Claims 5-7 were canceled by an amendment submitted on September 26, 2007 in response to a restriction requirement. Claims 1-4 and 8-13 are rejected in the Final Office Action that issued May 21, 2008. An Advisory Action that mailed on July 31, 2008 upheld the rejection of claims 1-4 and 8-13. Claims 1-4 and 8-13 are the subject of this appeal.

STATUS OF AMENDMENTS

An Amendment After Final Action was submitted on July 21, 2008 in response to a Final Office Action mailed on May 21, 2008. The Amendment After Final Action amended claim 4. In an Advisory Action mailed on May 21, 2008, it is indicated that the after Amendment After Final Action will be entered but does not place the application in condition for allowance. This Appeal Brief is in response to the Final Office Action mailed May 21, 2008, that finally rejected claims 1-4 and 8-13, which remain finally rejected in the Advisory Action mailed on July 31, 2008.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention, for example as claimed in claim 1, relates to a method of plasma-nitriding maraging steel (e.g., see, present patent application, page 2, lines 30-32). The maraging steel is a stainless maraging steel (e.g., see, present patent application, page 2, line 32). The plasma-nitriding of the stainless maraging steel is carried out at a temperature below 500°C (e.g., see, present patent application, page 2, lines 32-33, page 3, line 33 through page 4, line 1 and examples provided on page 5).

The present invention, for example as claimed in claim 8, relates to a method of plasma-nitriding maraging steel wherein at least one of the plasma-nitriding and the precipitation-hardening is carried out at a temperature between 370°C and 380°C as similarly, claim 11 relates to the plasma-nitriding being carried out at a temperature between 370°C and 380°C (e.g., see, present patent application, page 3, lines 33-34).

The present invention, for example as claimed in claim 9, relates to a method of plasma-nitriding maraging steel wherein at

least one of the plasma-nitriding and the precipitation-hardening is carried out at a temperature of 375°C, as similarly, claim 12 relates to the plasma-nitriding being carried out at a temperature of 375°C (e.g., see, present patent application, page 3, lines 33 through page 4, line 1).

The present invention, for example as claimed in claim 13, relates to a method of plasma-nitriding maraging steel including forming the stainless maraging steel into a cutting tool before the plasma-nitriding is carried out (e.g., see, present patent application, page 5, lines 4-9).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-4 and 8-13 of U.S. Patent Application Serial No. 10/522,287 are obvious under 35 U.S.C. §103(a) over Perkas (High-Strength Maraging Steels) in view of U.S. Patent No. 5,244,375 to Laurence ("Laurence").

Whether claims 8 and 11 of U.S. Patent Application Serial No. 10/522,287 are obvious under 35 U.S.C. §103(a) over Perkas (High-Strength Maraging Steels) in view of U.S. Patent No. 5,244,375 to Laurence ("Laurence").

Whether claims 9 and 12 of U.S. Patent Application Serial No. 10/522,287 are obvious under 35 U.S.C. §103(a) over Perkas (High-Strength Maraging Steels) in view of U.S. Patent No. 5,244,375 to Laurence ("Laurence").

Whether claim 13 of U.S. Patent Application Serial No. 10/522,287 is obvious under 35 U.S.C. §103(a) over Perkas (High-Strength Maraging Steels) in view of U.S. Patent No. 5,244,375 to Laurence ("Laurence").

ARGUMENT

Claims 1-4 and 8-13 are said to be obvious over Perkas in view of Laurence.

Appellants respectfully request the Board to address the patentability of independent claim 1 and further claims 2-4 and 8-13 as respectively depending from independent claim 1, based on the requirements of independent claim 1 although further arguments for the patentability of at least claims 8, 9, 11-13 are further provided. This position is provided in this section for the specific and stated purpose of simplifying the current issues on appeal. However, Appellants herein specifically reserve the right to argue and further address the patentability of claims 2-4 and 8-13 at a later date should the separately patentable subject matter of claims 2-4 and 8-13 later become an issue. Accordingly, this limitation of the subject matter presented for appeal herein, specifically limited to discussions of the patentability of independent claim 1 in this section of the Argument, is not intended as a waiver of Appellants' right to argue the

patentability of the further claims and claim elements at that later time.

Perkas discloses high-strength maraging steel. It is undisputed that Perkas fails to disclose or suggest "maraging stainless steel would be plasma-nitrided at a temperature below 500 °C." (See, Final Office Action, bottom of page 2 and continuing onto page 3.)

Laurence is cited to cure this deficiency in Perkas, however, it is respectfully submitted that reliance on Laurence is misplaced. Laurence discloses a ferrous-based press plate subjected to plasma-nitriding at an elevated temperature being substantially below 1000 ° F., which corresponds to 538° C.

Laurence treats steel plate with a process that includes a plasma-nitriding application at a maximum elevated temperature of 1000° F, as shown in section V of Laurence's Fig. 4 plate temperature/time graph. The Fig. 4 temperature/time graph of Laurence shows time sections I, II, III and IV that precede section V. Time sections I, II, III and IV are included to make sure that the maximum elevated temperature of 1000° F is reached by stable temperature steps before plasma nitriding in section V to prevent

structural problems before further subjecting the plasma-nitrided plate to a secondary laminate process. Laurence's 1000° F (538° C) temperature as disclosed by Fig. 4, section V, is critical to Laurence's process as clearly indicated by the lengths gone to in Laurence for achieving that temperature informally (see, Col. 8, lines 21-56).

Appellants' claim 1 method is not anticipated or made obvious by the teachings of Perkash in view of Laurence. Perkash and Laurence together do not disclose or suggest a method of plasma-nitriding stainless maraging steel at a temperature below 500° C, as claimed for the purposes disclosed.

It is critical that Laurence's plasma-nitriding is implemented only after a temperature of 1000°F (538°C) is reached, which does not overlap Appellants' claimed temperature range of less than 500° C. Moreover, Laurence's disclosure does not support determining applicant's claimed range of less than 500°C by routine experimentation.

MPEP §2144.05 (IIA) provides the legal standard for optimization within prior art condition or routine experimentation, stating that generally, differences in concentration or temperature

will not support patentability without evidence indicating such temperature or concentration is critical. In re Aller, 105 USPQ 233, 235 (CCPA 1995). The general condition of claim 1 (less than 500°C), however, is not disclosed by Laurence. Because the ranges do not overlap, Appellants' claimed range cannot be said to be "optimized" in view of Laurence. Appellants respectfully assert that Laurence's elevated temperature of 538°C for plasma-nitriding does not establish that claim 1 is prima facie obvious under Aller.

However, even if a prima facie case of obviousness is accepted in arguendo (although clearly this point is disputed as indicated above) due to Laurence's non-overlapping temperature range under Aller, it is respectfully submitted that Appellants' separate and non-overlapping temperature range is critical to the claimed method.

The MPEP at §2144.05 (III) sets forth the standard for rebutting a prima facie case of obvious with respect to overlapping temperature ranges based on showing criticality of the differences in the overlapping ranges. In re Woodruff, 16 USPQ2d 1934 (Fed. Cir. 1990).

Laurence at col. 4, lines 54-63, describes how section V of Fig. 4 shows the maximum temperature at which the actual plasma-nitriding is carried out (1000° F).

Appellants' Specification establishes the criticality of plasma-nitriding in a non-overlapping range of under 500°. The Specification states at page 2, line 30 to page 3, line 4, and page 3, line 33 to page 4, line 4, that the temperature at which the plasma-nitriding and precipitation-hardening is carried out ranges from 300 °C to 500 °C (e.g., see, present patent application, page 3, lines 33-34), preferably from 370 to 380°C (e.g., see, present patent application, page 3, line 34), and more preferably 375°C (e.g., see, present patent application, page 3, line 34 through page 4, line 1), "depending on the composition of the material involved, but never exceeds 500°C" (e.g., see, present patent application, page 4, line 1), "to provide a type of steel that is both very hard and very well corrosion-resistant, while maintaining sufficient tensile strength." (E.g., see, present patent application, page 2, lines 28-29.)

The duration of the plasma-nitriding depends on the desired thickness of the hardened layer and the temperature used. For

example, plasma-nitriding at 500°C for 2 hours gives a 22 μm layer thickness, at 450°C for 5 hours gives a 17 μm layer thickness, and at 375°C for 20 hours gives an 8 μm layer thickness. The resulting HV for the stainless maraging steel so treated may be as high as 1500 HV with a Young modulus in the compound layer increased by 20 per cent to 25 per cent compared to the base material (e.g., see, present patent application, page 4, lines 1-5). As made clear by the present patent application, the benefits of the present method cannot occur outside the critical range of not greater than 500°C (e.g., see, present patent application, page 4, line 1).

It is respectfully submitted that the Appellants recognized that others have performed plasma-nitriding however in prior systems such as Laurence, "[t]reatment at high temperatures can lead to spatial distortions of the product. Also the formation of chromium compounds, notably chromium nitride, adversely affect the corrosion resistance. But, most important, none of the methods proposed for stainless steels yield sufficient hardness." (See, present application, page 3, lines 25-29.) As pointed out in the present application, "[t]he resulting hardness [achieved by the method described in the present application] may be as high as 1500

HV, a remarkable value in view of the prior art ..." (See, present application, page 4, lines 7-8.)

The Advisory Action takes a position that Perkas discusses marauding steel of similar hardness as disclosed in the present patent application (see, advisory action, page 2), however Perkas teaches an elevated temperature of 800-850°C and above (see, Perkas, page 421). Therefore, it is respectfully submitted that the hardness disclosed by Perkas is not applicable to the process provided by Laurence.

The Advisory Action also takes a position that arguments provided by counsel cannot take the place of factually supported objective evidence. However, it is respectfully submitted that the arguments provided are not based on counsel's supposition, but in fact, are based on objective evidence as for example, provided by the description of maraging steel samples prepared as described in the present patent application, page 5. The arguments provided by counsel merely utilize the present patent application examples of prepared maraging steel in support of the arguments provided herein including the benefits provided by the present method over prior methods of preparing maraging steel.

Based on the foregoing, the Appellants respectfully submit that independent claim 1 is patentable over Perkas alone or together with Laurence, and notice to this effect is earnestly solicited.

Claims 2-4 and 8-13 depend from claim 1 and accordingly are allowable for at least this reason as well as for the separately patentable elements contained in each of the claims. Accordingly, separate consideration of each of the dependent claims is respectfully requested.

Claims 8 and 11 are said to be obvious over Perkas in view of Laurence.

Claim 8 recites in pertinent part that "the at least one of the plasma-nitriding and the precipitation-hardening is carried out at a temperature between 370°C and 380°C."

Claim 11 recites in pertinent part that "the plasma-nitriding is carried out at a temperature between 370°C and 380°C."

The Final Office Action takes a position that since Laurence shows below 1000°F, Laurence's range overlaps the ranges of claims

8 and 11. This position is respectfully refuted. It is respectfully submitted that as discussed in detail above, Laurence's range does not overlap the ranges provided in each of claims 8 and 11. Further, the criticality of the ranges is also discussed above and as such, the criticality of the ranges is established by the present patent application and accordingly, claims 8 and 11 are allowable for these additional reasons.

Claims 9 and 12 are said to be obvious over Perkas in view of Laurence.

Claim 9 recites in pertinent part that "the at least one of the plasma-nitriding and the precipitation-hardening is carried out at a temperature of 375°C."

Claim 12 recites in pertinent part that "the plasma-nitriding is carried out at a temperature of 375°C."

The Final Office Action takes a position that since Laurence shows below 1000°F, Laurence's range overlaps the ranges of claims 9 and 12. This position is respectfully refuted. It is respectfully submitted that as discussed in detail above,

Laurence's range does not overlap the ranges provided in each of claims 9 and 12. Further, the criticality of the ranges is also discussed above and as such, the criticality of the ranges is established by the present patent application and accordingly, claims 9 and 12 are allowable for these additional reasons.

Claim 13 is said to be obvious over Perkas in view of Laurence.

Claim 13 recites in pertinent part that "forming the stainless maraging steel into a cutting tool before the plasma-nitriding is carried out."

The Final Office Action takes a position that because the structure of a "cutting tool" is not limited, the "press plates" of Laurence are capable of being "a cutting tool" as recited in the claims. It is respectfully submitted that this position is not supportable by Laurence which makes clear that the process disclosed by Laurence "provide a hardened flat work piece, such as a press plate for the economical production of wear resistant decorative laminates." (See, Laurence, Col. 3, line 66 through

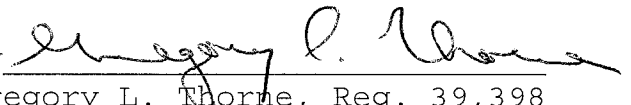
Col. 4, line 2.) Accordingly, claim 13 is allowable for this additional reason.

In addition, Appellants deny any statement, position or averment of the Examiner that is not specifically addressed by the foregoing argument and response. Any rejections and/or points of argument not addressed would appear to be moot in view of the presented remarks. However, the Appellants reserve the right to submit further arguments in support of the above stated position, should that become necessary. No arguments are waived and none of the Examiner's statements are conceded.

CONCLUSION

Claims 1-4 and 8-13 are patentable over Perkash in view of Laurence. Thus the Examiner's rejection of claims 1-4 and 8-13 should be reversed.

Respectfully submitted,

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APPENDIX A

CLAIMS ON APPEAL

1. (Previously Presented) A method of plasma-nitriding maraging steel, wherein the maraging steel is a stainless maraging steel, and the plasma-nitriding of the stainless maraging steel is carried out at a temperature below 500°C.

2. (Previously Presented) The method of claim 1, further comprising forming the stainless maraging steel into a shaver part before the plasma-nitriding is carried out.

3. (Previously Presented) The method of claim 1, wherein the plasma-nitriding is carried out simultaneously with or consecutively to precipitation-hardening.

4. (Previously Presented) The method of claim 3, wherein at least one of the plasma-nitriding and the precipitation-hardening is carried out at a temperature between 300°C and 500°C.

5-7. (Canceled)

8. (Previously Presented) The method of claim 3, wherein the at least one of the plasma-nitriding and the precipitation-hardening is carried out at a temperature between 370°C and 380°C.

9. (Previously Presented) The method of claim 3, wherein the at least one of the plasma-nitriding and the precipitation-hardening is carried out at a temperature of 375°C.

10. (Previously Presented) The method of claim 3, wherein the plasma-nitriding is carried out at a temperature between 300°C and 500°C.

11. (Previously Presented) The method of claim 3, wherein the plasma-nitriding is carried out at a temperature between 370°C and 380°C.

12. (Previously Presented) The method of claim 3, wherein the plasma-nitriding is carried out at a temperature of 375°C.

13. (Previously Presented) The method of claim 1, further comprising forming the stainless maraging steel into a cutting tool before the plasma-nitriding is carried out.

Patent
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and Advisory Action of July 31, 2008

APPENDIX B

Evidence on Appeal

None

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APPENDIX C

Related Proceedings of Appeal

None